

## FUELING WITH PROTEIN



### What is protein?

Protein is made of smaller components, or building blocks, known as amino acids. While there are 22 amino acids, nine of them are considered essential because they cannot be made by the body. This means you must get them from the foods you eat. Protein is essential for various functions in the body such as the growth and repair of tissues (including muscle), the production of hormones and enzymes, fluid balance, and more. Similar to carbohydrates, each gram of protein provides the body with 4 calories, but protein takes longer to digest. So, you can think of protein as helping you get full faster and stay full longer. Because of this, protein helps to stabilize blood sugar and thus energy levels.

Protein sources are considered complete, meaning that they contain all the essential amino acids your body cannot make, or incomplete, meaning that they only contain some of the essential amino acids. Animal proteins such as beef, pork, poultry, fish, dairy foods, and eggs are complete proteins. Some plant sources like soy foods, quinoa, amaranth, pistachios, and hemp seeds are also considered complete proteins. Plant proteins like beans, legumes, nuts, seeds, nut butters, and whole grains are considered incomplete. While these foods provide protein, if you are eating them as your main source of protein, it is important to include a variety of plant protein foods into your eating pattern to ensure you are getting all the essential amino acids needed on a daily basis.

### Why do you need protein?

As an athlete, you are constantly putting your muscles under stress from lifting, conditioning, and sport practices. This stress causes breakdown in muscle fibers which requires dietary protein to repair and rebuild. Without adequate protein intake, athletes may experience a loss in lean muscle mass, which ultimately can lead to a decrease in strength and performance.

Consuming adequate protein throughout the day helps provide the body the amino acids it needs to constantly repair and build muscle. Because of this, you should make a point to include protein at all of your meals and snacks.

**Before a workout**, protein helps to stabilize blood sugar and energy levels.

**During a workout**, large intakes of protein are not recommended due to the fact that protein slows down digestion. While a small amount of protein is okay, you should focus on simple carbohydrates as the main source of fuel during activity.

**After a workout**, protein is essential and should be consumed as soon as possible or at least within 2 hours after exercise. The consumption of 15-25 grams of high-quality protein immediately post-workout initiates the muscle repair and resynthesis process. Research suggests that muscle adaptation to training can be maximized by individualizing the recommendation and providing 0.3 grams of high-quality protein per kilogram of body weight in the window following exercise, then repeating this intake of protein with meals every 3-5 hours throughout the day.

### How much protein do you need to fuel activity?

The amount of protein needed to adequately build and repair muscle mass is based on the type of exercise you do and your body weight (in kilograms). To convert your weight into kilograms, divide your weight in pounds by 2.2. Then multiply your weight in kilograms by the protein recommendation for your sport (see the chart below). Sample calculations can be found on the next page.

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DAILY PROTEIN RECOMMENDATIONS	TYPE OF ACTIVITY/SPORT
1.0 gm/kg body weight	Moderately Active (a few days a week)
1.2 – 1.4 gm/kg body weight	Endurance Athletes (runners, cyclists, swimmers)
1.5 gm/kg body weight	Weight Loss (with activity included)
1.6 – 1.7 gm/kg body weight	Strength Athletes
1.7 – 2.0 gm/kg body weight	Heavy Strength Training Athletes

### DAILY PROTEIN NEEDS CALCULATION:

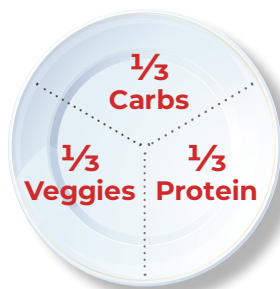
Weight \_\_\_\_\_ lbs / 2.2 = \_\_\_\_\_ kg  
 Weight \_\_\_\_\_ kg  
 x  
 Protein recommendation \_\_\_\_\_ gm/kg  
*(see chart above for recommendation)*  
 = \_\_\_\_\_ gm of protein per day

### POST-WORKOUT PROTEIN NEEDS CALCULATION:

Weight \_\_\_\_\_ kg  
 x  
 Protein recommendation of 0.3 gm/kg  
 = \_\_\_\_\_ gm of protein needed post-workout

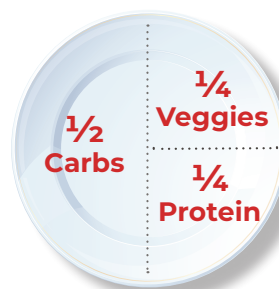
### HOW DO YOU SHAPE AN ATHLETE'S PLATE WITH PROTEIN?

#### Regular Training Day



If it is a regular training day, make **1/3 of your plate high-quality protein** at each of your meals. Examples include eggs at breakfast, fish at lunch, and lean beef at dinner.

#### Competition Day



If it is a competition day, a day where you are training twice a day with extended practice times, then make **1/4 of your plate high-quality protein**. This will allow for more carbohydrate to help provide the energy required for greater amounts of activity.